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# REVIEWS

*Plant Invasions: Human Perception, Ecological Impacts and Management.* Edited by B. Tokarska-Guzik, J. H. Brock, G. Brundu, L. Child, C. C. Daehler and P. Pyšek. 2008. Backhuys Publishers, Leiden. xvii + 427 pp., 103 figures, 50 tables. Paperback, Euro 126.00, ISBN 978-3-8236-1528-6.

Over the last two decades, plant invasions have become a subject of an increasing number of national and international meetings. This volume presents key contributions from the 8th International Conferences on the Ecology and Management of Alien Plant Invasions (EMAPi), held at the University of Silesia, Katowice, Poland, in 2005. In total, 27 chapters were written by 71 authors from 18 countries and four continents. The volume is divided into four sections: 1—Human perception and role in biological invasions (four chapters), 2—Biology, ecology and distribution of invasive species (seven), 3—Invasibility of habitats and impacts of invasive species (12), 4—Control and management (four). As in the previous EMAPi volumes, standardized international terminology is used (Richardson et al. 2000, Pyšek et al. 2004).

First, browsing through the Contents, we may be somewhat disappointed that only two contributions are from the USA (C. C. Daehler: Invasive plant problems in the Hawaiian Islands; J. H. Brock: Ecology and management of *Alhagi maurorum* in Arizona). Nevertheless, because plant invasions are a global problem, we can learn important lessons from studies conducted in Australia, Europe, or Africa. Moreover, several contributions in this volume are of general importance, addressing very basic questions of invasion biology. For example, Daehler's analysis of major motivations for plant introductions in Hawaii (nostalgia, neophilia, economics, improvement of ecosystem services) could serve as a model for similar studies in other countries. Similarly, approaches used in the chapter by Philip Hulme and co-authors on multiscale analyses of plant invasions to Mediterranean islands could be applied in different parts of the world. Twenty contributions from different parts of Europe serve as examples of a very well-organized research on plant invasions over this continent. Recent publication of the European catalogue of all known invasive species (DAISIE 2009) is an impressive result of cooperation across Europe.

The book is very well edited and packed with interesting data. However, as in the previous volume that I reviewed for Madroño (Rejmánek 2003), one chronic weakness of plant invasion biology still remains: a lack of rigorous evidence for assumed harmful impacts of invasive taxa in natural and seminatural areas. The phrase "ecological impacts" is in the title of this new volume, but only a very few contributors are dealing with this topic. Moreover, if they do, their conclusions are based on descriptions of pairs of invaded and non-invaded plots (space for time substitution). The only exception is experimental study on competition between *Acacia longifolia* and native woody species in Portugal (Christiane Werner et al.).

Although, unfortunately, rather expensive for a paperback ($161), this volume is definitely worth attention of all botanists interested in plant invasions.

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## Literature Cited

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Pyšek, P., D. M. Richardson, M. Rejmánek, G. L. Webster, M. Willamson, and J. Kirschner. 2004. Alien plants in checklists and floras: toward better communication between taxonomists and ecologists. Taxon 53:131–143.

Rejmánek, M. 2003. Review of L. Child et al. (eds.) Plant invasions: ecological threats and management solutions. Madroño 51:392–393.

Richardson, D. M., P. Pyšek, M. Rejmánek, M. G. Barbour, F. D. Panetta, and C. J. West. 2000. Naturalization and invasion of alien plants: concepts and definitions. Diversity and Distributions 6:93–107.

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*The California Deserts: An Ecological Rediscovery.* By Bruce M. Pavlik. 2008. University of California Press, Berkeley and Los Angeles, CA and London, UK. 384 pp. ISBN 0-520-25140-7 $60.00, hardcover. ISBN 0-520-25145-8 $27.50, paper.

People around the world have an unquenchable fascination with deserts. *The California Deserts: An Ecological Rediscovery* by Bruce Pavlik will help to fill the niche in any library for deserticolous or desertophilic readers thirsty for interesting knowledge about the three deserts of California. This is not the first book penned on the subject, and will not be the last. But Pavlik has made an attempt to combine and weave together, in a fairly readable and colorfully illustrated fashion, a broad range of topics on "the California desert bioregion." To appreciate these wonderful natural resources, ultimately one needs to appreciate that our desert bioregion has been an ever-changing landscape. Derivative desert life forms have evolved in a cumulative manner from lineages inhabiting western North America during wetter epochs. The compositions of the present communities have been so highly modified during fluctuations in climatic and geologic conditions, and human activities, that none of us would probably recognize the original formation. Now we have the privilege and responsibility to understand how the ecosystems function, and in the pursuit of that goal to reconstruct the whys. Pavlik's point, proposed by his subtitle (*an ecological rediscovery*), is that biologists were not the first to discover the nature of California's deserts, but that humans living here for thousands of years knew many secrets and essences of desert life, therefore scientists have often rediscovered what the original inhabitants already experienced.

Most readers will likely appreciate the author's introduction to folk knowledge of desert via a fictionalized narrative, of how an ancient seed-carrying basket was left within a small cave in Eureka Valley, found the next century by famous desert naturalist Mary DeDecker, and how that basket led to rediscovery of ancient knowledge. Next we read a condensed historical account of how westerners successively visited California's deserts and learned from the original inhabitants, leading eventually to scientific curiosity and our modern knowledge. Following are chapters on the complex physical origins and abiotic characteristics of deserts; on the creatures, present and past, inhabiting southeastern California; on the adaptations of selected, extant desert species to deal with extremes in the environment; and on the ecology of desert communities. The text ends with an overview of recent changes inflicted on our deserts and what has been and is being done to preserve and restore extant communities. No glossary is provided.

In general, the book is designed to be a bridge of knowledge between the scientific and management literature and the learned reader, professional scientist or not, who may know little about desert biology. Toward that goal, the amount of professional jargon is greatly reduced, metric units are not used (with several exceptions), literature citations are mostly absent from paragraphs, memorable factoids and short essays are included to capture interest, and excellent colored images, accumulated from many contributors, are used to accompany the text. This is an attractive book with a nice, clean layout. Approximately 85% of the text pages have photographic images, graphs, line drawings, or tables. A research scientist will, on the other hand, find many parts somewhat uncomfortable to read, lacking precision in how observations are presented—selectively and with too much poetic license—avoiding the appropriate terms (e.g., seeds that actually are fruits or fruitlets), and presenting many findings and offering conclusions that would not be admissible in a professional journal. So it is that books like this may bend too far to make a subject understandable to amateurs, and therein plant seeds—or fruits—in minds of the general public that scientists will have to push against to overturn because speculation morphs into "common knowledge."

My greatest disappointment was with the long chapters on "Operations and Origins" and "Remarkable Biota." These together equal the core for any treatment on adaptations of desert organisms. Basic principles are not used effectively to give the reader a clear route to understanding desert adaptations, and some common desert features are never discussed. Much interesting information is presented, and a person who knows the literature will recognize where the data were originally published. But numerous statements are at best misleading, often lost in translation from the vast scientific literature on ecophysiology and structure-function relationships. The reader does not have an opportunity, without literature cited, to determine what is correct and what is not. An explanation of types of photosynthesis is terribly flawed, including diagrams that misrepresent carbon fixation in both $C_4$ and CAM (initially cytosolic and not within chloroplasts), origin and diffusion of oxygen, and basic characteristics of each pathway, along with other errors in text and a table. Rather than taking a modern approach on resistance to stress, which any amateur can understand, the author adopted a totally artificial treatment of strategies for species as being "drought-susceptible," "drought-avoiding," and "drought-tolerant," and thereby takes an approach popular before the onset of modern ecophysiology and now largely out of date.

For the *Madroño* audience, the book has some taxonomic shortcomings. It is already antiquated in that the author did not always adopt scientific names of *Flora of North America* (volumes available) and those combinations to be used in the upcoming edition of *The Jepson Manual.* Here is an opportunity to pass along the best available names for vascular plant taxa, to begin the process of breaking down public resistance to changes in scientific binomials, but instead wastes efforts of scores of biologists trying to sort out the phylogeny of organisms. Second, on the majority of pages common names of organisms are used, with a paucity of scientific names, this to reduce jargon and text length, but seldom are binomials repeated, so a reader must flip back to an earlier entry, often pages away, to make the match. Some of that problem would have been eliminated by always including the scientific name in figure legends, and including them also with common name and a former scientific name in the index. Third, as expected by all of us, some latinized names are misspelled (e.g., see back cover), because great proofreading and double checking is required. Finally, there is the perennial problem of having some common names that authors insist on being capitalized while others, especially plant names, are not. No modern molecular data are discussed to define paleoendemics versus neoendemics, and, in fact, *Bursera microphylla* is classified as a paleoendemic even though that native is not endemic to the California desert bioregion.

*The California Deserts* was written not as a review with scientific precision, but rather citing relatively few references (pp. 305–327). That accepted, there are many seminal books and articles that should have been referenced to allow readers to pursue their interests and network information.

Honestly, there is plenty of interesting coverage to enjoy in this reasonably priced book. Readers will look forward to reading the final chapter, in which Pavlik passes along some really important knowledge about saving our deserts.

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